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RUBBER AND PLASTICS RESEARCH ASSOCIATION
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POLYMER FILMS: GAS DIFFUSION
(1973 - MAY 82)

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BIBLIOGRAPHIC INFORMATION

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POLYMER FILMS: GAS DIFFUSION (1973 - MAY 82)
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MAY 81

NEW ENGLAND RESEARCH APPLICATION CENTER, STORRS, CT

NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VA

REPORT PERIOD COVERED: 1973 - MAY 82

THIS BIBLIOGRAPHY CONTAINS CITATIONS CONCERNING THE DIFFUSION OF GASES THROUGH POLYMERIC FILMS RELATIVE TO THE STRUCTURE AND TYPE OF GAS. EMPHASIS IS PLACED ON METHODS OF MEASURING PERMEABILITY AND THE SELECTIVE TRANSPORT OF GASES. SPECIFIC STUDIES INCLUDE PACKAGING FILMS, REINFORCED POLYMERS, RUBBERS, AND METALLIZED PLASTICS. THE PERMEABILITY OF OXYGEN AND WATER VAPOR THROUGH INSULATION ON WIRES AND CABLES IS ALSO INCLUDED. (CONTAINS 90 CITATIONS)

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SAMPLE CITATION

TITLE-----POLYPHOSPHAZENES - IMPORTANT INORGANIC POLYMERS

ACCESSION----79-01 26261L
NUMBER

AUTHOR-----SINGLER, R. E. HAGNAUER, G. L. SCHNEIDER, N. S.

POLYM.NEWS,5,NO.1,SEPT.1978,P.9-17

POLYM. NEWS-5, SEPT. 1978, P.9-17

ABSTRACT-----THE SYNTHESIS OF POLYPHOSPHAZENES AND THEIR CHAIN AND BULK
STRUCTURES ARE DESCRIBED. THEIR USE AS FLUOROELASTOMERS AND
IN FLAME-RETARDANT APPLICATIONS IS REVIEWED TOGETHER WITH
THEIR BIOMEDICAL APPLICATIONS, 34 REFS. 45D.

SAMPLE SUBJECT INDEX ENTRY

KEYWORD-----FLUOROELASTOMERS

CITATION PAGE NUMBER-----16 19-01 26261L---ACCESSION NUMBER

ABOUT
RUBBER AND PLASTICS RESEARCH ASSOCIATION

RAPRA IS THE MACHINE-READABLE DATA BASE PRODUCED BY THE RUBBER AND PLASTICS RESEARCH ASSOCIATION OF GREAT BRITAIN. THE TIME SPAN OF THE DATA BASE IS FROM JANUARY 1972 TO PRESENT. THE DATA BASE PROVIDES COVERAGE OF CHEMISTRY AND CHEMICAL ENGINEERING OF POLYMERS (RUBBERS AND PLASTICS). TECHNICAL AND COMMERCIAL ASPECTS OF RUBBER AND PLASTICS ARE COVERED.

THE SOURCES OF THE CITATIONS ARE APPROXIMATELY 60% JOURNAL ARTICLES, 25% PATENTS AND THE REMAINDER FROM MONOGRAPHS, TRADE LITERATURE AND GOVERNMENT REPORTS. ABOUT 20,000 ITEMS ARE ADDED TO THE DATA BASE ANNUALLY, AND THE DATA BASE PRESENTLY CONTAINS ABOUT 150,000 CITATIONS. ABOUT 10 JOURNALS ARE ABSTRACTED IN THEIR ENTIRETY, WITH SELECTIVE ABSTRACTING PERFORMED FROM 400 JOURNAL TITLES REVIEWED FOR INPUT.

ABOUT PUBLISHED SEARCHES

PUBLISHED SEARCHES ARE SPECIAL INFORMATION PRODUCTS DEVELOPED FROM A VARIETY OF ONLINE DATA BASES. THE NTIS DATA BASE, WHICH IS THE KEYSTONE OF THE PUBLISHED SEARCH PROGRAM, ALONE CONTAINS MORE THAN 750,000 DOCUMENT/DATA RECORDS OF GOVERNMENT-SPONSORED RESEARCH. OTHER DATA BASES SEARCHED INCLUDE THOSE OF THE U.S. FIRE ADMINISTRATION, FEDERAL EMERGENCY MANAGEMENT AGENCY; AMERICAN PETROLEUM INSTITUTE; U.S. DEPARTMENT OF ENERGY(EDB); ENGINEERING INDEX; INSTITUTE OF PAPER CHEMISTRY; MANAGEMENT CONTENTS; INFORMATION RETRIEVAL LIMITED; INSTITUTION OF ELECTRICAL ENGINEERS (INSPEC); INTERNATIONAL FOOD INFORMATION SERVICE (FSTA); AND THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION. (IAA).

PUBLISHED SEARCHES ARE SPECIALLY PREPARED BIBLIOGRAPHIES REFERENCING REPORTS WITH FULL BIBLIOGRAPHIC CITATIONS, INCLUDING INFORMATIVE ABSTRACTS AND, WHEN POSSIBLE, ORDERING INFORMATION AND PRICE. THE ABSTRACTS PROVIDE A QUICK, INEXPENSIVE WAY TO DETERMINE WHICH REPORTS IN THE NTIS DATA BASE, FOR ONE, ARE OF SPECIAL INTEREST TO A USER. THE SEARCHES ARE PREPARED BY INFORMATION SPECIALISTS AND ARE AVAILABLE IN MANY TOPIC AREAS; THEY ARE UPDATED AT REGULAR INTERVALS, AND COST THIRTY DOLLARS IN PAPER OR MICROFICHE FOR DOMESTIC ORDERS. A COMPLETE LIST OF CURRENT PUBLISHED SEARCHES IS AVAILABLE BY REQUESTING BROCHURE NUMBER PB82-105024 FOR FIVE DOLLARS, REFUNDABLE WITH FIRST PUBLISHED SEARCH PURCHASE. IN ADDITION TO REGULAR UPDATING, NEW TITLES (SEARCHES) ARE BEING ADDED EACH WEEK AND NEW ARRANGEMENTS ARE BEING COMPLETED WITH DATA BASE OWNERS TO ACCESS AN EVEN GREATER VARIETY OF INFORMATION SOURCES.

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SULPHUR DIOXIDE

CITATIONS

SORPTION AND DIFFUSION OF HYDROCARBON VAPOURS IN GLASSY
POLYMERS 82-03 03929L

BARRIE, J. A. WILLIAMS, M. J. L. MUNDAY, K.

POLYM.ENGNG.SCI.,20,NO.1,MID-JAN.1980,P.20-9

SORPTION ISOTHERMS IN THE REGION OF LOW RELATIVE PRESSURES WERE DETERMINED AT SEVERAL TEMPERATURES FOR METHANE, PROPANE AND CHLORODIFLUOROMETHANE IN PS, AND FOR PROPANE IN BISPHENOL A POLYCARBONATE AND POLYVINYL ACETATE. THE RESULTS WERE WELL REPRESENTED BY THE ISOTHERM EQUATION OF DUAL SORPTION THEORY AS APPLIED TO GLASSY POLYMERS. A STUDY WAS MADE OF THE TEMPERATURE DEPENDENCE OF THE ISOTHERM PARAMETERS. THE LANGMUIR COMPONENT TO SORPTION DECREASED AS TG WAS APPROACHED, AND MEASUREMENTS WITH POLYVINYL ACETATE CONFIRMED THAT THIS COMPONENT WAS ABSENT ABOVE THE TRANSITION. AVERAGE DIFFUSION COEFFICIENTS WERE OBTAINED FROM SORPTION (DESORPTION) RATE CURVES AT CONSTANT PRESSURE FOR PROPANE IN PS AND POLYCARBONATE, AND A PROCEDURE WAS DEVELOPED FOR THEIR ANALYSIS TO YIELD THE DIFFUSION COEFFICIENTS OF THE SORBED SPECIES. 24 REFS. 93513

PRESSURE DEPENDENCE OF DIFFUSION COEFFICIENT FOR CARBON
DIOXIDE IN GLASSY POLYMERS 82-03 03930L

TOI, K.

POLYM.ENGNG.SCI.,20,NO.1,MID-JAN.1980,P.30-5

THE PRESSURE DEPENDENCE OF THE APPARENT DIFFUSION AND PERMEATION COEFFICIENTS WAS OBSERVED USING THE PERMEATION TIME-LAG METHOD FOR CARBON DIOXIDE IN GLASSY PETP, PS AND PVC BELOW 1 ATM. THE PERMEATION COEFFICIENT WAS CONSTANT, WHEREAS THE DIFFUSION COEFFICIENT INCREASED WITH PRESSURE. IT WAS CONCLUDED THAT THE ADSORBED CARBON DIOXIDE WAS COMPLETELY IMMOBILISED AND DID NOT PARTICIPATE DIRECTLY IN THE DIFFUSION. A COMPUTER WAS USED IN THE NUMERICAL CALCULATION TO DETERMINE THE TRUE DIFFUSION COEFFICIENT FROM THE MODEL OF PAUL ET AL. 10 REFS. 93513

FICKIAN DIFFUSION OF ALKANES THROUGH GLASSY POLYMERS :
EFFECTS OF TEMPERATURE, DIFFUSANT SIZE AND POLYMER STRUCTURE
82-03 03931L

CHEN, S. P. EDIN, J. A. D.

POLYM.ENGNG.SCI.,20,NO.1,MID-JAN.1980,P.40-50

DIFFUSIVITIES (D) RANGING OVER SIX ORDERS OF MAGNITUDE WERE OBTAINED USING A PERMEATION APPARATUS EMPLOYING A GAS FLOW METHOD AND A FLAME IONISATION DETECTOR. LOG D FOR HYDROCARBONS IN BISPHENOL A POLYCARBONATE (PC) AT 120C WAS PROPORTIONAL TO THE SQUARE OF THE MOLECULAR DIAMETER AS GIVEN BY THE LENNARD-JONES POTENTIAL. THIS CORRELATION HELD EVEN FOR THE NON-SPHERICAL N-HEXANE MOLECULE. ACTIVATION ENERGY FOR DIFFUSION WAS ALSO LINEARLY RELATED TO MOLECULAR DIAMETER, WITH VALUES OF 9.5 AND 23 KCAL/MOL FOR METHANE AND NEOPENTANE IN PC, RESPECTIVELY. THE DIFFUSION DATA DID NOT CORRELATE WITH THE TG OF SIMILAR POLYMERS OF HIGHER TG, BUT THE PRESENCE OF SUBSIDIARY TRANSITIONS APPEARED TO ENHANCE SEGMENTAL MOBILITY, INCREASING THE HYDROCARBON RATE OF DIFFUSION. 32 REFS. 43C12-93513

STATISTICAL MECHANICAL MODEL OF SORPTION AND DIFFUSION OF
SIMPLE PENETRANTS IN POLYMERS 82-03 03932L

PACE, R. J. DATYNER, A.

POLYM.ENGNG.SCI.,20,NO.1,MID-JAN.1980,P.51-8

TWO POSSIBLE TYPES OF RANDOM MOTION FOR A SPHERICAL PENETRANT IN AN AMORPHOUS POLYMER ARE DESCRIBED, ONE TYPE DETERMINING THE JUMP FREQUENCY AND ACTIVATION ENERGY OF DIFFUSION, THE OTHER DETERMINING THE JUMP LENGTH. SORPTION OF SIMPLE GASES AT LOW PENETRANT PRESSURES IS ASSUMED TO OCCUR MOSTLY IN PRE-EXISTING HOLES, BOTH ABOVE AND BELOW TG, AND THE SAME PENETRANT DIFFUSION MECHANISM IS ASSUMED TO HOLD IN THE TWO REGIONS. CHANGES IN APPARENT HEAT OF SOLUTION AND ACTIVATION ENERGY OF DIFFUSION OBSERVED AT TG ARE EXPLAINED IN TERMS OF ADDITIONAL HOLE FORMATION WITH INCREASE IN TEMPERATURE ABOVE TG. EVIDENCE IS GIVEN THAT HOLE FORMATION IN SIMPLE POLYMERS SUCH AS PE MAY OCCUR BY CHAIN KINKING, WHILE FOR POLYMERS WITH ARTICULATED SIDE GROUPS IT APPEARS THAT HOLE FORMATION ARISES PRINCIPALLY FROM MOTIONS WITHIN THESE GROUPS. 26 REFS. 93513

SELECTION OF BARRIER MATERIALS FROM MOLECULAR STRUCTURE
82-03 03934L

LEE, W. M.

POLYM.ENGNG.SCI.,20,NO.1,MID-JAN.1980,P.65-9

A PREDICTION TECHNIQUE FOR GAS PERMEABILITY FROM POLYMER MOLECULAR STRUCTURE WAS DEVELOPED ON THE BASIS OF A SPECIFIC FREE VOLUME DIFFUSION THEORY, IN WHICH THE FREE VOLUME AVAILABLE PER UNIT MASS IN A POLYMER STRUCTURE CONTROLS THE RATE OF DIFFUSION AND, HENCE, THE RATE OF PERMEATION OF THE GAS. THE THEORY PREDICTS A LINEAR RELATIONSHIP BETWEEN LOG PERMEABILITY AND SPECIFIC VOLUME, AND A NUMBER OF POLYMERS COVERING SIX ORDERS OF MAGNITUDE IN CARBON DIOXIDE AND OXYGEN PERMEABILITY FOLLOWED THIS CORRELATION. THIS TECHNIQUE GREATLY SIMPLIFIES THE SELECTION OF BARRIER MATERIALS FOR PACKAGING APPLICATIONS. MOLECULAR STRUCTURES WITH STRONG POLAR-TO-POLAR INTERACTIONS AND HYDROGEN BONDING FORCES PROVIDE GOOD BARRIERS TO CARBON DIOXIDE AND OXYGEN. 13 REFS. 93513

OXYGEN TRANSMISSION THROUGH HIGHLY CROSSLINKED POLYMERS
82-03 03935L

GORDON, G. A. RAVVE, A.

POLYM.ENGNG.SCI.,20,NO.1,MID-JAN.1980,P.70-7

HIGHLY CROSSLINKED POLYMERS OF VARYING STRUCTURE WERE PRODUCED BY REACTION OF POLYGLYCIDYL ACRYLATE AND POLYGLYCIDYL METHACRYLATE WITH CHLORENDIC, GLUTARIC, MALEIC, SUCCINIC AND POLYMALONIC ANHYDRIDE CROSSLINKING AGENTS. TOPOLOGY WAS VARIED BY THE USE OF A DILUENT AND A COMONOMER IN THE BACKBONE CHAIN. OXYGEN PENETRATION MEASUREMENTS WERE MADE ON THESE POLYMERS COATED ONTO A PP FILM BEFORE CROSSLINKING. THE CROSSLINKING PROCESS GREATLY REDUCED THE OXYGEN PERMEABILITY WHICH, HOWEVER, WAS DEPENDENT NOT ONLY ON THE DEGREE OF CROSSLINKING BUT ALSO ON THE CROSSLINK DENSITY, THE CHEMICAL NATURE OF THE STRUCTURAL ELEMENTS, AND THE TOPOLOGY OF THE POLYMER NETWORK. 27 REFS. 42C35-55CAH-93513

VAPOUR-PHASE POLYMERISATION : I. FORMATION OF POLY (P-PHENYLENETEREPTHALAMIDE GAS BARRIER COATINGS
82-02 02023L

IKEDA, R. M. ANGELO, R. J. BOETTCHER, F. P. BLOMBERG, R. N. SAMUELS, M. R.

ORG.COATINGS PLAST.CHEM.,VOL.41,SEPT.1979,P.287-92

THIN COATINGS OF POLYPHENYLENE TEREPHTHALAMIDE WERE SYNTHESISED BY VAPOUR PHASE POLYCONDENSATION AND CONCURRENT DEPOSITION ONTO A PET SUBSTRATE. THE COATINGS HAD GOOD RESISTANCE TO PERMEATION BY OXYGEN AND WERE ALSO MOISTURE RESISTANT. 5 REFS. 43C318-6A31-723

INVERSE GAS CHROMATOGRAPHY, A METHOD FOR STUDYING POLYMER-MIGRANT INTERACTIONS IN POLYOLEFIN PACKAGING MATERIALS 82-C2 02270L

SENICH, G. A. SANCHEZ, I. C.

ORG.COATINGS PLAST.CHEM.,VOL.41,SEPT.1979,P.345-9

THE USE OF INVERSE PHASE GAS CHROMATOGRAPHY TO MEASURE THE EXTENT OF MIGRATION OF AN IMPURITY OR ADDITIVE FROM A POLYMERIC CONTAINER INTO ITS CONTENTS IS DISCUSSED. THE SPECIFIC RETENTION VOLUME CAN BE USED TO CALCULATE THE POLYMER-MIGRANT INTERACTION PARAMETERS WHICH WHEN COMBINED WITH SOLUBILITY OF THE MIGRANT IN THE SOLVENT, ALLOWS THE EQUILIBRIUM PARTITION COEFFICIENT TO BE CALCULATED. THE DIFFUSION COEFFICIENT OF MIGRANT IN POLYMER CAN BE USED TO ESTIMATE THE DEGREE OF MIGRATION DURING THE EXPECTED SHELF LIFE. THERMODYNAMIC AND KINETIC EFFECTS ARE TAKEN INTO CONSIDERATION. 19 REFS. 42C11-935T

EFFECT OF FILLERS ON THE PROPERTIES OF URETHANE POLYMERS
82-01 00264L

MAIK, M. KRYSZTAFKIEWICZ, A.

POLIM.TWORZ.WIELK.,26,NO.7,JULY 1981,P.245-7 LANG-
POLISH

THE DEPENDENCE OF POLYMER PROPERTIES ON FILLER CONTENT, ON COMPOSITION, THICKNESS AND DENSITY OF THE INTERPHASE LAYER AND ON SURFACE CHARACTERISTICS OF FILLER WAS INVESTIGATED. PARTICULAR ATTENTION WAS PAID TO SILICA FILLERS AND THEIR INFLUENCE ON THE PROPERTIES, E.G. MORPHOLOGY AND GAS PERMEABILITY, OF URETHANE POLYMERS. 35 REFS. 43C6-51SS-9 ARTICLES FROM THIS JOURNAL CAN BE REQUESTED FOR TRANSLATION BY SUBSCRIBERS TO THE RAPRA PRODUCED INTERNATIONAL POLYMER SCIENCE AND TECHNOLOGY

MODEL FOR PERMEATION OF MIXED GASES AND VAPOURS IN GLASSY POLYMERS 82-01 00520L

KOROS, W. J. CHERN, R. T. STANNETT, V. HOPFENBERG, H. B.

J.POLYM.SCI.POLYM.PHYS.,19,NO.10,OCT.1981,P.1513-30

A MODEL WAS DISCUSSED WHICH EXPLAINED COMPLEX EFFECTS OF FEED COMPOSITION AND PRESSURE ON COMPONENT PERMEABILITIES IN HIGH-PRESSURE GAS SEPARATORS BASED ON GLASSY POLYMER MEMBRANES. PERMEATION OF GAS MIXTURES WAS ANALYSED ON THE BASIS OF A FORM OF FICK'S LAW WHICH ACCOUNTS FOR THE FACT THAT PENETRANTS IN GLASSY POLYMERS SORB INTO AND DIFFUSE THROUGH TWO DIFFERENT MOLECULAR ENVIRONMENTS. POTENTIAL DEVIATIONS FROM THE THEORY WERE DISCUSSED IN TERMS OF SEPARABLE EFFECTS DUE TO GAS SOLUBILITY AND MOLECULAR MOBILITY. 47 REFS. 6M-93513

INFLUENCE OF PETROLEUM GAS ON THE DIFFUSION PROPERTIES OF
POLYMERIC MEMBRANES 81-12 79071L

OLENINA, Z. K. ERSHOV, B. N. BRESHCHENKO, E. M.

PLAST.MASSY, NO.5, 1980, P.29 LANG- RUSSIAN

A STUDY IS DESCRIBED OF THE PERMEABILITY OF A MEMBRANE MADE FROM POLYPROPYLENE AND A FLUORINE-CONTAINING PLASTIC UNIRRADIATED AND IRRADIATED WITH ARGON IONS AFTER PROLONGED TREATMENT WITH PETROLEUM GAS. 5 REFS. 42C12-6M-93513
ARTICLES FROM THIS JOURNAL CAN BE REQUESTED FOR TRANSLATION BY SUBSCRIBERS TO THE RAPRA PRODUCED INTERNATIONAL POLYMER SCIENCE AND TECHNOLOGY

GAS PERMEATION THROUGH POROUS POLYMERIC MEMBRANE
81-11 77873L

KAMIDE, K. MANABE, S. NOHMI, T. MAKINO, H. KAWAI, T.

POLYM.PREPRINTS, 21, NO.2, AUG.1980, P.90-2

THE GAS FLOW MECHANISM IN POLYMERIC MEMBRANES HAVING VARIOUS TYPES OF PORE SIZE DISTRIBUTION WAS STUDIED. 11 REFS.
6M-93513

SILICONE RUBBER TECHNOLOGY REVIEW 81-11 76608C

POLMANTEER, K. E.

MINNEAPOLIS, MINN., JUNE 2-5, 1981, PAPER 1, PP.64. PREPRINT.
012 PUBLCN. DETAILS- ACS, RUBBER DIV. 119TH
MEETING, SPRING 1981. PAPERS

A REVIEW IS PRESENTED OF THE CHEMICAL STRUCTURE, SYNTHESIS, VULCANISATION, SOLUBILITY, SURFACE ENERGY, PERMEABILITY, OXIDATION, HYDROLYSIS AND RHEOLOGICAL AND LOW TEMPERATURE PROPERTIES OF SILICONE RUBBERS, INCLUDING POLYDIMETHYLSILOXANE AND SILOXANE COPOLYMERS. FILLERS AND THEIR EFFECTS ON MECHANICAL PROPERTIES ARE ALSO CONSIDERED.
28 REFS. 45C

PERMEATION OF GASES THROUGH MODIFIED POLYMER FILMS. V.
PERMEATION AND DIFFUSION OF HELIUM, NITROGEN, METHANE,
ETHANE AND PROPANE THROUGH GAMMA-RAY CROSSLINKED
POLYETHYLENE 81-11 76102L

MACDONALD, R. W. HUANG, R. Y. M.

J.APPL.POLYM.SCI.,26,NO.7,JULY 1981,P.2239-63

GAMMA-IRRADIATION OF PE FILMS WAS CARRIED OUT IN VACUUM,
ACETYLENE AND ACETYLENE-NITROGEN MIXTURES IN ORDER TO STUDY
THE CHANGES INDUCED IN EFFICIENCY OF CROSSLINKING AND
TRANSPORT PROPERTIES WITH IRRADIATION DOSE AND ATMOSPHERE.
PERMEABILITY AND DIFFUSION CONSTANTS WERE OBTAINED FOR
HELIUM, NITROGEN, METHANE, ETHANE AND PROPANE AND THE
PLASTICISING EFFECT OF THE HYDROCARBON GASES INVESTIGATED.
50 REFS. 42C11-8953-93513

POLYMER BREAKS THE GAS BARRIER 81-10 75169L

PLAST.RUBB.WKLY.,NO.901,22ND AUG.1981,P.5 CORP. AUTH-
KANEGAFUCHI CHEMICAL INDUSTRY CO.

BRIEF DETAILS ARE PRESENTED ON KANEKA PARNEX, AN AMORPHOUS
ACRYLIC COPOLYMER, WHICH IS REPORTED TO HAVE EXCELLENT
CHEMICAL RESISTANCE AND HIGH GAS BARRIER PROPERTIES. THE
MATERIAL CAN BE INJECTION, EXTRUSION OR BLOW MOULDED, VACUUM
FORMED OR CALENDERED. APPLICATIONS, INCLUDING PACKAGING,
PUMPS, ELECTRICAL COMPONENTS AND PETROL CAPS, ARE MENTIONED.
42C351A-9351

DIFFUSION OF GASES IN GLASSY POLYMERS. II. DUAL SORPTION
THEORY 81-07 69357L

NAPP, S. J. PEPPAS, N. A.

POLYM.NEWS,7,NO.4,1981,P.174-7

THE ABILITY OF THE DUAL MODE THEORY TO PREDICT AND CORRELATE
A RANGE OF MASS TRANSPORT PROCESSES WHERE ONE POPULATION IS
IMMOBILE RELATIVE TO ANOTHER IS EXAMINED. 17 REFS. 93513

COMPARATIVE DERIVATOGRAPH TESTING OF THE THERMAL
DECOMPOSITION OF SUSPENSION PVC AND PVC POWDER POLYMERISED
IN BULK 81-06 68247L

BODRI, E. KOVACS, B. ZIEGLER, B.

MUANYAG ES GUMI.,18,NO.3,1981,P.85-7 LANG- HUNGARIAN

DERIVATOGRAPH RECORDS SHOW THAT THE THERMAL DECOMPOSITION OF
PVC PRODUCED BY BULK POLYMERISATION AND SUSPENSION
POLYMERISATION IS EXOTHERMIC AND ENDOTHERMIC, RESPECTIVELY.
THE DIFFERENCE IS DUE TO THE PERICELLULAR SURFACE SKIN FOUND
ON SUSPENSION PVC GRANULES WHICH HINDERS THE ACCESS OF
OXYGEN, WHILE IN THE CASE OF BULK PVC GRANULES OXYGEN IS
ABLE TO CONTACT PRIMARY GRANULES UNRESISTED. 9 REFS.
42C382-622-932 ARTICLES FROM THIS JOURNAL CAN BE REQUESTED
FOR TRANSLATION BY SUBSCRIBERS TO THE RAPRA PRODUCED
INTERNATIONAL POLYMER SCIENCE AND TECHNOLOGY

EFFECT OF TENSILE DEFORMATIONS ON GASE TRANSPORT IN GLASSY
POLYMER FILMS 81-06 67207L

SMITH, T. L. ADAM, R. E.

POLYMER,22,NO.3,MARCH 1981,P.299-304

THE EFFECT OF SIMPLE TENSILE DEFORMATIONS ON THE
PERMEABILITY AND DIFFUSION COEFFICIENTS OF GASES IN GLASSY
POLYMERS WAS STUDIED. THE FILMS USED WERE POLYCARBONATE AND
POLYIMIDE WITH CARBON DIOXIDE AND NITROGEN. FOR NITROGEN IN
PC THE COEFFICIENTS DECREASED WITH TIME AT CONSTANT STRAIN
AND WERE PARTIALLY DEPENDENT ON STRAIN AND THERMAL
HISTORIES. FOR CARBON DIOXIDE IN POLYIMIDE, THE COEFFICIENTS
INCREASED WITH STRAIN UP TO 2% AT 125C AND THEN DECREASED,
SHOWING A STRAIN-INDUCED RELAXATION. 41 REFS. 43C12-93513

EFFECT OF VARIOUS FACTORS ON THE PERMEABILITY OF GASES
THROUGH POLYMER FILMS. III. PROPERTIES OF FILMS PREPARED
FROM MODIFIED POLYSTYRENE AND PVC 81-05 65408L

KAMINSKA, A.

POLIM.TWORZ.WIELK.,25,NO.12,1980,P.442-4 LANG- POLISH

THE EFFECT OF METHYL METHACRYLATE-BUTADIENE-STYRENE
COPOLYMERS (MBS) AND SAN AS MODIFIERS ON THE PERMEABILITY TO
AIR OF FILMS OF PVC AND PS, AS WELL AS ON THE UV STABILITY
OF SUCH FILMS, WAS INVESTIGATED. ADDITION OF 1 TO 3% MBS OR
SAN WAS FOUND TO REDUCE THE PERMEABILITY OF PS AND INCREASE
THAT OF PVC; RESISTANCE TO UV IRRADIATION WAS REDUCED IN
BOTH POLYMERS. PERMEABILITY MEASUREMENT APPEARED TO BE A
SENSITIVE METHOD FOR DETECTING CHANGES IN THE STRUCTURE OF
POLYMERS. 5 REFS. 93513 ARTICLES FROM THIS JOURNAL CAN BE
REQUESTED FOR TRANSLATION BY SUBSCRIBERS TO THE RAPRA
PRODUCED INTERNATIONAL POLYMER SCIENCE AND TECHNOLOGY

DIFFUSION OF GASES IN GLASSY POLYMERS. I. FREE VOLUME AND
ENERGY FLUCTUATION THEORIES 81-05 66434L

NAPP, S. J. PEPPAS, N. A.

POLYM.NEWS,7,NO.3,JAN.1981,P.118-21

THE FREE VOLUME AND ENERGY FLUCTUATION THEORIES WHICH
DESCRIBE THE KINETICS OF GASEOUS TRANSPORT IN HOMOPOLYMERS
ARE BRIEFLY DISCUSSED. A MORE DETAILED DISCUSSION OF THE
DUAL SORPTION THEORY IS ALSO GIVEN. 12 REFS. 93513

BUTYL RUBBER AND ITS USE IN NON-TYRE APPLICATIONS
81-02 59593L

RITCHIE, K.

HULE MEX.PLAST.,36,NO.414,JULY 1980,P.5/18 LANG-
SPANISH

THE CHEMICAL STRUCTURE AND PREPARATION OF BUTYL RUBBER AND

HALOBUTYL RUBBERS IS DISCUSSED, AND THE MAIN PROPERTIES OF THESE MATERIALS ARE REVIEWED, I.E. GAS PERMEABILITY, THERMAL STABILITY, OZONE RESISTANCE, ENERGY ABSORPTION AND CHEMICAL RESISTANCE. ATTENTION IS ALSO PAID TO COMPOUNDING, CURING SYSTEMS AND OTHER COMPOUNDING INGREDIENTS. APPLICATIONS EXAMINED INCLUDE PHARMACEUTICAL STOPPERS, VEHICLE SUSPENSIONS, TANK LININGS, MEMBRANES, ELECTRICAL CONDUCTORS, POLYMERIC PROPERTY MODIFIERS FOR PLASTICS, FOOTBALL BLADDERS, SEALANTS AND CONVEYOR BELTING. FORMULATIONS FOR THESE APPLICATIONS ARE GIVEN, WITH PARTICULAR REFERENCE TO POLYMERS PRODUCED BY POLYSAR LTD. 7 REFS. 42C131D12

SELECTIVE TRANSPORT OF SULPHUR DIOXIDE THROUGH POLYMER MEMBRANES. I. POLYACRYLATE AND CELLULOSE TRIACETATE SINGLE LAYER MEMBRANES 81-01 58208L

KUEHNE, D. L. FRIEDLANDER, S. K.

TEC PROCESS DES.DEV.,19,NO.4,OCT.1980,P.609-16

COMMERCIAL SAMPLES OF POLYACRYLATE AND CELLULOSE TRIACETATE POLYMERS WERE FOUND TO BE SELECTIVELY PERMEABLE TO SULPHUR DIOXIDE GAS. ULTRA THIN FILMS WERE PREPARED TO ACHIEVE HIGH SO₂ FLUXES, REQUIRED FOR SO₂ GAS SEPARATORS. SO₂ PERMEABILITY HAD A LARGE PRESSURE DEPENDENCE, WHICH ADVERSELY AFFECTED MEMBRANE PERFORMANCE. 18 REFS. 6M-93513

SELECTIVE TRANSPORT OF SULPHUR DIOXIDE THROUGH POLYMER MEMBRANES. II. CELLULOSE TRIACETATE/POLYACRYLATE COMPOSITE MEMBRANES 81-C1 58209L

KUEHNE, D. L. FRIEDLANDER, S. K.

IEC PROCESS DES.DEV.,19,NO.4,OCT.1980,P.616-23

A NOVEL TECHNIQUE IS DESCRIBED FOR PREPARING POLYACRYLATE/CELLULOSE TRIACETATE POLYMER MEMBRANES FOR SO₂ GAS SEPARATIONS. SO₂ PERMEATION DATA WERE OBSERVED TO BE PRESSURE DEPENDENT. A CONTINUOUS FLOW SYSTEM WAS BUILT TO MODEL THE GAS FLOW IN A MEMBRANE SEPARATOR, AND SELECTED MEMBRANES WERE TESTED WITH BINARY MIXTURES OF N₂ AND SO₂. MEMBRANE PERFORMANCE WAS EVALUATED IN TERMS OF DESIGN GOALS FOR COMBUSTION AND SMELTER GAS APPLICATIONS. 6 REFS.

6M-93513

EFFECT OF VARIOUS FACTORS ON THE PERMEABILITY OF GASES
THROUGH POLYMER FILMS. II. CHANGES IN THE PERMEABILITY OF
AIR THROUGH POLYSTYRENE FILMS UNDER THE EFFECT OF UV
IRRADIATION 80-12 57154L

KAMINSKA, A. MLYNARCZYK, D.

POLIM.TWORZ.WIELK,25,NO.8,AUG.1980,P.289-90

POLISH. PHOTOCHEMICAL REACTIONS TAKING PLACE IN PS, WHICH
CHANGE THE MOLECULAR STRUCTURE AND THE STRUCTURE OF THE
FILMS, AFFECT THE PERMEABILITY OF PS FILMS. CROSSLINKING
DECREASES, AND DEGRADATION AND BRANCHING INCREASE THE
PERMEABILITY. THE DIFFERENCES IN CHANGES IN PERMEABILITY OF
PS FILMS OF DIFFERENT MOLECULAR WEIGHT AND POLYMOLECULARITY
SUGGEST THAT THE COURSE OF PHOTOCHEMICAL PROCESSES DEPENDS
ON BOTH THESE PARAMETERS. A DECREASE IN RESISTANCE TO THE
ACTION OF UV IRRADIATION IS OBSERVED WITH INCREASING PS
POLYMOLECULARITY. IT IS CONCLUDED THAT THE DETERMINATION OF
CHANGES IN PERMEABILITY OF FILMS MAY BE USED TO EXAMINE THE
COURSE OF PHOTOCHEMICAL PROCESSES IN POLYMER FILMS. 5 REFS.
ARTICLES FROM THIS JOURNAL CAN BE REQUESTED FOR TRANSLATION
BY SUBSCRIBERS TO THE RAPRA PRODUCED INTERNATIONAL POLYMER
SCIENCE AND TECHNOLOGY

GAS PERMEABILITY OF HIGH POLYMERS PARTICULARLY OF RUBBERS
80-12 57566L

SCHUCK, H.

KAUT.U.GUMMI KUNST.,33,NO.9,SEPT.1980,P.705-15

GERMAN. THE RUBBERS STUDIED INCLUDE POLYISOBUTYLENE,
SILICONE RUBBER AND NR. 17 REFS.

POLYMERISATION FROM THE VAPOUR PHASE. I.
POLY-P-PHENYLENETEREPHTHALAMIDE (PPTA) GAS BARRIER
COATINGS 80-11 55870L

IKEDA, R. M. ANGELO, R. J. BOETTCHER, F. P. BLOMBERG,
R. N. SAMUELS, M. R.

J. APPL. POLYM. SCI., 25, NO. 7, JULY 1980, P. 1391-405

AN ATMOSPHERIC-PRESSURE, VAPOUR-PHASE POLYMERISATION TECHNIQUE WAS USED TO DEPOSIT THIN PPTA COATINGS ONTO SHEET SUBSTRATES. A MINIMUM DEPOSITION TEMP. OF 170C WAS FOUND TO BE CRITICAL. THESE COATINGS EXHIBITED GOOD OXYGEN BARRIER PROPERTIES AND WERE FOUND TO CONSIST OF FUSED 0.1 MU M PARTICULATES. SEM OF THE TOP SURFACES OF THE COATINGS REVEALED THEIR PARTICULATE ORIGIN. SIMILAR EVIDENCE WAS ALSO OBTAINED FROM SEM EXAMINATION OF FRACTURE SURFACES AND TRANSMISSION ELECTRON MICROSCOPY OF MICROTOMED SECTIONS. THE COALESCENCE OF THESE COATINGS WAS SHOWN BY SEM OF PLASMA-ETCHED SURFACES AND OXYGEN PERMEABILITY DATA. THE UNIPLANAR ORIENTATION OF THE POLYMER CRYSTALS IN THESE COATINGS WAS STRONG EVIDENCE FOR THE EPITAXIAL GROWTH OF THE CRYSTALS. 5 REFS.

POLYMER MEMBRANE ELECTRODE BASED POTENTIOMETRIC AMMONIA GAS
SENSOR 80-11 55922L

MEYERHOFF, M. E.

ANALYT. CHEM., 52, NO. 9, AUG. 1980, P. 1532-4

A DESCRIPTION IS GIVEN OF THE INCORPORATION OF THE ANTIBIOTIC NONACTIN INTO AN APPROPRIATE PLASTICISER/PVC MEMBRANE ELECTRODE AND THEN USED AS THE INNER ELECTRODE IN A GAS SENSING ARRANGEMENT FOR DISSOLVED AMMONIA. 7 REFS.

POSSIBLE MECHANISM OF SELECTIVITY OF DIFFUSION OF MOLECULAR
GASES IN POLYMERS 80-11 54673L

BRUEV, A. S.

POLYM.SCI.USSR,21,NO.5,1979,P.1256-66

A STUDY WAS MADE OF THE DIFFUSION OF NON-SPHERICAL MOLECULES IN POLYMER FILMS. IT WAS SHOWN THAT THE CORRELATION BETWEEN THE DIRECTION OF CHANGE IN DIFFUSION AND MOLECULAR ORIENTATION IN THE CASE OF DIATOMIC AND LINEAR MOLECULES COULD INCREASE THE RATE OF DIFFUSION TRANSFER. RESULTS WERE IN AGREEMENT WITH EXPERIMENTAL DATA CONCERNING THE DIFFUSION OF MOLECULAR GASES IN POLYMERS. 25 REFS.

ELASTOMERE AUF BASIS ETHYLEN-PROPYLEN 80-10 53121A

42C11C12 CORP. AUTH- WIRTSCHAFTSVERBAND DER DEUTSCHER
KAUTSCHUKIND. PUBLCN. DETAILS- GRUNES BUCH 39

GERMAN. THIS BOOK CONTAINS SECTIONS ON THE POLYMERISATION OF ETHYLENE-PROPYLENE RUBBER, MONOMERS, CATALYSTS AND POLYMERISATION KINETICS; THE MOLECULAR STRUCTURE AND MORPHOLOGY OF THE ELASTOMERS, E.G. MWD, TG, CRYSTALLINITY, RHEOLOGICAL PROPERTIES, THE VULCANISATION OF EPM AND EPDM, CURING AGENTS AND CROSSLINKING REACTIONS, PROCESSING, EXTRUSION, CALENDERING, MIXING, FILLERS AND ADDITIVES, BLENDS OF THE ELASTOMERS WITH OTHER POLYMERS, CHEMICAL RESISTANCE, AGEING, FLAMMABILITY, GAS PERMEABILITY, BLOCK COPOLYMERS, AND THERMOPLASTIC ELASTOMERS BASED ON ETHYLENE-PROPYLENE, AND APPLICATIONS FOR ETHYLENE PROPYLENE ELASTOMERS, E.G. BUILDING APPLICATIONS, SEALING STRIPS, SPORTS SURFACES, ELECTRIC CABLES, PROTECTIVE COATINGS AND ADHESIVES. A LIST OF PATENTS AND DETAILS OF FORMULATIONS ARE GIVEN. 863 REFS.

OPPORTUNITIES IN ORIENTED NITRILE RESIN CONTAINERS
80-09 52281L

CARLSON, J. A. BORLA, L.

MOD. PLAST. INT., 10, NO. 6, JUNE 1980, P. 38-40

CONSIDERATION IS GIVEN TO THE PRODUCTION OF BOTTLES AND OTHER CONTAINERS FOR BEVERAGES, FOODSTUFFS, ETC., BY ORIENTATION BLOW MOULDING OF ACRYLONITRILE COPOLYMERS, I.E. COPOLYMERS OF ABOUT 70% ACRYLONITRILE WITH ACRYLATES OR STYRENE, POSSIBLY CONTAINING ELASTOMERIC IMPACT MODIFIERS. THE ACRYLONITRILE MONOMER PROVIDES HIGH TENSILE STRENGTH, STIFFNESS, GAS BARRIER AND CHEMICAL RESISTANCE PROPERTIES, AND THE COMONOMER CONTRIBUTES PROCESSIBILITY. DATA ARE PRESENTED ON TEMPERATURE AND DRAW RATIO FACTORS WHICH CONTROL ENHANCEMENT OF MECHANICAL PROPERTIES AND PERMEABILITY CHARACTERISTICS DURING ORIENTATION. COMMERCIALY AVAILABLE COPOLYMERS ARE BAREX 210 (VISTRON CORP.) AND SOLTAN (SOLVAY & CIE.). DEVELOPMENTS IN PROCESSING METHODS AND MARKET POTENTIALS FOR SUCH CONTAINERS ARE SURVEYED.

GAS EOS DIFFUSION AND PERMEATION IN CLOSED-CELL POLYMERIC FOAMS
80-09 52620C

MEHTA, B. S. COLOMBO, E. A.

WASHINGTON, D.C., APRIL 1978, P. 689-92. CONF. 012 PUBLCN.
DETAILS- SOC. PLAST. ENGRS. 36TH ANNUAL TECHNICAL CONFERENCE

A QUANTITATIVE EXPLANATION IS PRESENTED OF THE EFFECT OF TEMP., BLOWING GAS CONCENTRATION AND STRUCTURAL CHARACTERISTICS, SUCH AS CELL SIZE AND CELL ORIENTATION, ON GASEOUS DIFFUSION AND PERMEATION OF CLOSED-CELL PS FOAM. 8
REFS. 42C21-6124-93513

GAS PERMEABILITY OF POLYMERIC MEMBRANES 80-08 51719L

BELEN'KAYA, N. M. BUBLEVSKII, I. M. GARNIZOVA, A. N.

PLAST.MASSY, NO.10, 1979, P.60

RUSSIAN. 2 REFS. ARTICLES FROM THIS JOURNAL CAN BE REQUESTED FOR TRANSLATION BY SUBSCRIBERS TO THE RAPRA PRODUCED INTERNATIONAL POLYMER SCIENCE AND TECHNOLOGY

PERMEATION OF GASES AND VAPOURS THROUGH POLYMER FILMS AND THIN SHEET. I. 80-08 51211L

LOMAX, M.

POLYM.TEST., 1, NO.2, APRIL/JUNE 1980, P.105-47

A REVIEW IS MADE OF TECHNIQUES FOR MEASURING THE PERMEATION OF GASES AND VAPOURS THROUGH POLYMER FILMS AND THIN SHEETS. 67 REFS.

EFFECT OF VARIOUS FACTORS ON GAS PERMEABILITY OF POLYMERIC FILMS. I. AIR PERMEABILITY OF POLYSTYRENE FILMS 80-07 50126L

KAMINSKA, A.

POLIM.TWORZ.WEILK., 25, NO.2, FEB.1980, P.47-8

POLISH. THE PERMEABILITY TO AIR OF PS FILMS PREPARED BY CASTING POLYMER SOLUTIONS ON GLASS PLATES AND EVAPORATING THE SOLVENT WAS DETERMINED. FILMS WERE PREPARED FROM PS FRACTIONS OF DIFFERING MOLEC.WT. AND FROM MIXTURES OF FRACTIONS EXHIBITING SIMILAR INTRINSIC VISCOSITY BUT DIFFERENT POLYDISPERSITY. AIR PERMEABILITY WAS FOUND TO INCREASE WITH INCREASE IN MOLEC.WT. AND WITH BROADENING OF MWD. 18 REFS. ARTICLES FROM THIS JOURNAL CAN BE REQUESTED FOR TRANSLATION BY SUBSCRIBERS TO THE RAPRA PRODUCED INTERNATIONAL POLYMER SCIENCE AND TECHNOLOGY

GAS PERMEABILITY OF METALLISED POLYMER FILMS
80-06 48608L

KAPANIN, V. V. REITTLINGER, S. A. STRUNINA, O. B.
PRILIPOV, V. V.

VYS.SOED.B,19,NO.12,DEC.1977,P.903-8

RUSSIAN. THE GAS PERMEABILITY OF A LAMINATE CONSISTING OF
PE FILM SANDWICHED BETWEEN, ON EACH SIDE, A LAYER OF
ALUMINIUM AND A LAYER OF PETP WAS INVESTIGATED AND PROMISING
RESULTS OBTAINED. 5 REFS.

DETERMINATION OF THE SOLUBILITY OF GASES IN POLYMER FILMS BY
GAS CHROMATOGRAPHY 80-06 48962L

KAPANIN, V. V. SIROTIN, Y. A. D. REITTLINGER, S. A.
PRILIPOV, V. V.

POLYM.SCI.USSR,21,NO.2,1979,P.500-2

SOLUBILITY COEFFICIENTS ARE DETERMINED FOR HELIUM, OXYGEN,
ARGON AND NITROGEN IN LDPE FILMS. THESE RESULTS SHOWED
SATISFACTORY AGREEMENT WITH RESULTS IN THE LITERATURE. 9
REFS.

INFLUENCE OF ADDITION OF OLIGOMER IC VINYLALKYLDIMETHYL
SILANES ON THE GAS PERMEABILITY OF POLYVINYL TRIMETHYLSILANE
80-06 49196L

EVSEENKO, A. L. TEPLYAKOV, V. V. DURGAR'YAN, S. G.
NAMETKIN, N. S.

VYS.SOED.B,21,NO.2,1979,P.153-5

RUSSIAN. 5 REFS. ARTICLES FROM THIS JOURNAL CAN BE
REQUESTED FOR TRANSLATION BY SUBSCRIBERS TO THE RAPRA
PRODUCED INTERNATIONAL POLYMER SCIENCE AND TECHNOLOGY

IRRADIATION EFFECT ON GAS DIFFUSION IN POLYMER FILMS. I.
HYDROGEN DIFFUSION THROUGH MYLAR FILM 80-06 47953C

RAO, K. A. PUSHPA, K. K. IYER, R. M.

GUJARAT, FEB. 1979, PP. 1. CONFER. 012 PUBLCN. DETAILS-
INDIA, BOARD OF RES. NUCLEAR SCI. INDUS. POLYM. & RADIAT. SYMPOS.

(ABSTRACT ONLY). 43C112-625-93513

ISOTOPE EFFECT IN THE DIFFUSION OF HYDROGEN AND DEUTERIUM IN
POLYMERS 80-06 48299L

TOI, K. TAKEUCHI, K. TOKUDA, T.

J. POLYM. SCI. POLYM. PHYS., 18, NO. 2, FEB. 1980, P. 189-98

TEMPERATURE DEPENDENCES OF DIFFUSION AND PERMEATION
COEFFICIENTS OF HYDROGEN AND DEUTERIUM IN GLASSY AND RUBBERY
POLYMER FILMS WERE MEASURED. THE SIZE OF THE FREE VOLUME
ELEMENT IN RUBBERY POLYMERS WAS CALCULATED ACCORDING TO THE
THEORY OF FRISCH AND ROGERS FOR THE QUANTUM ISOTOPE EFFECT,
BUT THE FREE VOLUME WAS TOO LARGE FOR PRECISE CALCULATION
BELOW THE TG. THE COOPERATIVE MOVEMENT OF SEGMENTS IS ALSO
DISCUSSED USING THE RATIO OF PRE-EXPONENTIAL FACTORS FOR
DIFFUSION MECHANISMS ABOVE AND BELOW THE TG. 7 REFS. 93513

ENTROPY CORRELATION THEORY AND DIFFUSION MEASUREMENTS FOR
ORIENTED POLYMERS 80-04 45453L

BARKER, R. E. TSAI, R. C. WILLENCY, R. A.

J. POLYM. SCI. POLYM. SYMP., NO. 63, 1978, P. 109-29

THE ENTROPY CORRELATION THEORY PREDICTS THAT ANY STRUCTURAL
CHANGE WHICH DECREASES THE CONFIGURATIONAL ENTROPY OF A
COMPLEX MOLECULAR SYSTEM WILL LEAD TO AN APPROXIMATELY EQUAL
INCREASE IN THE ACTIVATION ENTROPY FOR STRUCTURALLY
CONTROLLED RATE PROCESSES SUCH AS DIFFUSION. CONFIRMATION
OF THE THEORY IS PRESENTED FOR THE CASE OF GAS DIFFUSION IN
PERMANENTLY STRETCHED POLYMERIC MEMBRANES. SYSTEMS

INVESTIGATED INCLUDED REPRESENTATIVE POLYALKYL METHACRYLATES AND A SELECTION OF NON-POLAR AND POLAR GASES. 35 REFS. 93513

ENERGETICS OF GAS SORPTION IN GLASSY POLYMERS
79-12 39757L

KOROS, W. J. PALL, D. R. HUVARD, G. S.

POLYMER, 20, NO. 8, AUG. 1979, P. 956-60

AN ANALYTICAL EXPRESSION WAS DERIVED FOR PREDICTION OF THE MOLAR ENTHALPY OF SORPTION AT CONSTANT CONCENTRATION IN DUAL MODE SORPTION SYSTEMS. THE EXPRESSION WAS SHOWN TO PROVIDE A GOOD DESCRIPTION OF DATA DERIVED BY FORMAL THERMODYNAMIC ANALYSIS OF CARBON DIOXIDE SORPTION ISOTHERMS IN PETP. 13 REFS. 93513

PERMEABILITY OF METALLISED POLYMER FILMS. I. METHOD FOR GAS PERMEABILITY MEASUREMENT 79-12 39758L

SPRINGER, J. BRITO, H.

J. APPL. POLYM. SCI., 24, NO. 2, 15TH JULY 1979, P. 329-37

GERMAN. THE CONSTRUCTION AND OPERATION OF AN APPARATUS FOR THE DETERMINATION OF GAS PERMEABILITY THROUGH METALLISED POLYMER FILMS IS DESCRIBED. THE TEST GASES (NITROGEN, OXYGEN AND CARBON DIOXIDE) PENETRATE UNDER PRESSURE DIFFERENCES FROM 100 TORR TO 20 BAR THROUGH METALLISED ABS FILMS. THE METAL LAYERS CONSIST OF CHEMICALLY DEPOSITED NICKEL AND GALVANIC DEPOSITED COPPER. THE QUANTITY OF PERMEATED GASES IS DETERMINED BY GAS CHROMATOGRAPHY, AND LEAK EFFECTS CAN BE MEASURED QUANTITATIVELY. THE PERMEABILITY OF GAS MIXTURES, I.E. AIR, CAN ALSO BE INVESTIGATED. THE APPARATUS ALLOWS THE DETERMINATION OF EXTREMELY LOW PERMEABILITY RATES AS WELL AS THOSE FOR CONVENTIONAL POLYMER SYSTEMS. 29 REFS. 293513T

PROPERTIES AND APPLICATIONS OF POLYMER ALLOYS
79-11 38007L

GRECO, R. MARTUSCELLI, E.

CHIMICA E INC., 61, NO. 4, APRIL 1979, P. 298-309.

ITALIAN. THE CLASS OF MATERIALS CONSIDERED INCLUDES POLYMER BLENDS, GRAFT COPOLYMERS, BLOCK COPOLYMERS AND INTERPENETRATING POLYMER NETWORKS. AN EXAMINATION IS MADE OF THERMODYNAMIC COMPATIBILITY, HOMOGENEITY, ELASTIC MODULUS, RUPTURE RESISTANCE, IMPACT PROPERTIES, ABRASION RESISTANCE, THERMAL PROPERTIES, THERMAL AND LIGHT DEGRADATION, FLAMMABILITY, GAS AND VAPOUR PERMEABILITY OF FILMS AND MEMBRANES, CRYSTALLISATION KINETICS, RECYCLING, AND COUPLING AGENTS. MAJOR PROBLEMS TO BE SOLVED INCLUDE HETEROGENEITY AND INCOMPATIBILITY, AND COUPLING AGENTS AND/OR INTERFACIAL PROPERTY MODIFIERS NEED TO BE DEVELOPED.
36 REFS. 6125

WEATHERING PROPERTIES OF POLYMERS IN CABLES 79-11 38147L

CHEVASSUS, F.

HULE MEX. PLAST., 34, NO. 397, FEB. 1979, P. 5/20

SPANISH. A DETAILED STUDY IS MADE OF THE EFFECTS OF WEATHERING ON RUBBER AND PLASTICS CABLE INSULATION, WITH REFERENCE TO CABLES OF ALL TYPES. THE ACTION OF LIGHT AND OF LIGHT STABILISERS, HUMIDITY, OZONE AND OTHER GASES IS CONSIDERED FOR DIFFERENT POLYMERS, AND ELECTRICAL PROPERTIES ARE DISCUSSED. 6E1-93

EVAPORATION OF POLYMER- SOLVENT MIXTURES. DETERMINATION OF
VAPOUR PRESSURES FROM GAS EOS DIFFUSION COEFFICIENTS
79-10 37611L

COCA, J. BUENO, J. L. ALVAREZ, R.

POLYM.BULL.,1,NO.7,MAY 1979,P.459-64

THE STEFAN-WINKELMANN DIFFUSION TECHNIQUE WAS USED TO
DETERMINE VAPOUR PRESSURES OF HIGH BOILING POINT
COMPOUND/SOLVENT MIXTURES. DATA ARE REPORTED AT A TEMP. OF
67C FOR THE MIXTURES POLYPHENYL ETHER (6 RINGS)/BENZENE AND
CARBOWAX 1500/BENZENE AND AT 100C FOR POLYPHENYL
ETHER/TOLUENE AND TRICRESYL PHOSPHATE/TOLUENE. THE RANGE OF
CONCENTRATION WAS ONLY LIMITED BY THE APPEARANCE OF A SOLID
PHASE AND RESULTS WERE IN GOOD AGREEMENT WITH THOSE
DETERMINED BY VAPOR-PRESSURE OSMOMETRY. 6 REFS.
43C52-93513T

EVALUATION OF RESULTS OF SIMPLIFIED DETERMINATION METHODS OF
POLYMER MEMBRANE PERMEABILITY TO VAPOURS 79-10 36773L

IZYDORCZYK, J. PODKOWKA, J. SALWINSKI, J.

J.APPL.POLYM.SCI.,23,NO.8,15TH APRIL 1979,P.2265-9

PERMEABILITY COEFFICIENTS FOR SOME SELECTED SYSTEMS
COMPRISING A POLYMER MEMBRANE AND ORGANIC VAPOURS WERE
MEASURED BY SIMPLIFIED METHODS, WITH THE AIM OF EVALUATING
THE SUITABILITY OF THESE TECHNIQUES FOR MEMBRANE
PERMEABILITY DETERMINATION UNDER AVERAGE CONDITIONS OF USE.
RESULTS OBTAINED BY WEIGHED CELL, CAPILLARY EVAPORATION AND
ELECTROCHEMICAL METHODS WERE COMPARED AND ANALYSED, TAKING
INTO ACCOUNT PERMEATION MODELS ASSOCIATED WITH DIFFERENT
APPARATUS AND OPERATION PRINCIPLES AS WELL AS DIFFERENT
MEASURING CONDITIONS. FOR SIMILAR MASS TRANSFER MODELS,
PERMEABILITY COEFFICIENT VALUES OF THE SAME ORDER AND CLOSE
ACCURACY OF MEASUREMENT WERE OBTAINED. 8 REFS. 6M-93513

PERMEABILITY OF OXYGEN THROUGH POLYMERS. I. A NOVEL
SPECTROPHOTOCHEMICAL METHOD 79-10 36776L

PETRAK, K.

J. APPL. POLYM. SCI., 23, NO. 8, 15TH APRIL 1979, P. 2365-71

A NEW METHOD FOR THE MEASUREMENT OF OXYGEN PERMEABILITY THROUGH POLYMER MEMBRANES IS BASED ON MONITORING THE SENSITISED PHOTO-OXYGENATION OF A SINGLET OXYGEN ACCEPTOR IN A DETECTOR LAYER SANDWICHED BETWEEN A SUPPORT AND THE POLYMER LAYER. THE DETECTOR LAYER CONTAINS A SENSITISER WHICH ON IRRADIATION PRODUCES SINGLET EXCITED OXYGEN FROM THE GROUND-STATE OXYGEN AVAILABLE. THE SINGLET OXYGEN REACTS WITH AN OXYGEN ACCEPTOR, THE DISAPPEARANCE OF WHICH CAN BE FOLLOWED BY SPECTROPHOTOMETRY. IN THE PHOTOSTATIONARY STATE, CHANGES IN ACCEPTOR ABSORBANCE ARE DIRECTLY RELATED TO THE OVERALL FLUX OF OXYGEN THROUGH THE MEMBRANE. THE PERMEATION COEFFICIENT OF OXYGEN IS PROPORTIONAL TO THE RATE OF CHANGE IN ACCEPTOR ABSORBANCE AND TO THE INVERSE OF THE OXYGEN CONCENTRATION IN THE SURROUNDING ATMOSPHERE. OXYGEN PERMEABILITY WAS MEASURED FOR A GROUP OF WATER-SOLUBLE POLYMERS. 13 REFS. 6M-93513T

INFLUENCE OF THE STRUCTURAL ISOMERISM OF A POLYMER ON THE
PERMEABILITY DIFFUSION AND SOLUBILITY OF HELIUM, HYDROGEN,
NEON AND ACETONE VAPOUR 79-10 36895L

TIKHOMIROV, B. P. POLYAK, M. A.

IZV. VUZ KH. I KH. TEKH., 22, NO. 2, 1979, P. 211-4

RUSSIAN. A STUDY IS DESCRIBED OF THE PERMEABILITY OF POLYMETHYL ACRYLATE (PMA) TO HELIUM, HYDROGEN AND NEON, AND THE DIFFUSION AND SOLUBILITY COEFFICIENTS IN THE GLASS TRANSITION TEMPERATURE RANGE WERE DETERMINED. THE ACTIVATION ENERGY OF DIFFUSION OF ACETONE INTO PMA, AND THE COEFFICIENT OF DIFFUSION, ARE COMPARED WITH THOSE FOR PVAC, AND REASONS FOR THE DIFFERENCE ARE ADVANCED. 5 REFS. 42C35111-93513
ARTICLES FROM THIS JOURNAL CAN BE REQUESTED FOR TRANSLATION BY SUBSCRIBERS TO THE RAPRA PRODUCED INTERNATIONAL POLYMER SCIENCE AND TECHNOLOGY

GAS-PERMEABILITY OF POLYMERIC PACKAGING FILM
79-08 35301L

DODONOV, A. M. MURAVIN, YA. G.

PLAST.MASSY, NO.12, 1978, P.53

RUSSIAN. DATA ARE PRESENTED ON THE GAS PERMEABILITY OF PACKAGING MATERIALS, TOGETHER WITH A DESCRIPTION OF A DEVICE USED FOR TESTING THIS PROPERTY. 2 REFS. 6P11-93513 ARTICLES FROM THIS JOURNAL CAN BE REQUESTED FOR TRANSLATION BY SUBSCRIBERS TO THE RAPRA PRODUCED INTERNATIONAL POLYMER SCIENCE AND TECHNOLOGY

DIFFUSION OF GASES THROUGH POLYURETHANE BLOCK POLYMERS
79-08 35444L

MCBRIDE, J. S. MASSARD, T. A. COOPER, S. L.

J.APPL.POLYM.SCI., 23, NO.1, 1ST JAN. 1979, P.201-14

THE DIFFUSIVITIES OF SIMPLE GASES THROUGH A SERIES OF PU BLOCK COPOLYMERS OF DIFFERING AROMATIC URETHANE CONTENT AND TYPE OF SOFT SEGMENT WERE MEASURED USING A QUADRAPOLE MASS SPECTROMETER AS A DETECTING DEVICE. ALTHOUGH AN ARRHENIUS EXPRESSION GENERALLY DESCRIBED THE TEMP. DEPENDENCE OF DIFFUSION IN THIS SYSTEM, A DISCONTINUITY WAS OBSERVED IN THE ARRHENIUS PLOTS FOR SOME MATERIALS AND THE DISCONTINUITY WAS FOUND TO BE RELATED TO THE ONSET OF THE TG IN THE HARD DOMAINS. POLYESTER-URETHANES HAD LOWER ACTIVATION ENERGIES FOR DIFFUSION THAN POLYETHER-URETHANES OF SIMILAR HARD SEGMENT COMPOSITION. 36 REFS. 43C6-93512

DIFFUSION CELL FOR THE STUDY OF GAS TRANSFER THROUGH REINFORCED POLYMER MATERIALS 79-06 32784L

KAPANIN, V. V. PRILIPOV, V. V.

POLYM.SCI.USSR, 19, NO.5, 1977, P.1345-8

A DIFFUSION CELL WAS DESIGNED TO EXAMINE GAS TRANSFER

THROUGH REINFORCED FILM MATERIALS OVER A WIDE RANGE OF TEMPERATURES. THE GAS PERMEABILITY OF RUBBERISED FABRICS OF TERYLENE, LAVSAN (PETP) AND COTTON WAS STUDIED IN THE TEMP RANGE 20-80C. IT WAS SHOWN THAT THE LOGARITHMIC DEPENDENCE OF PERMEABILITY ON INVERSE TEMP. IS NON-LINEAR. THE EFFECTIVE ACTIVATION ENERGY OF PERMEABILITY WAS DETERMINED FOR THE TEMP. RANGE OF 20-40C. 3 REFS. 628-93513T

BARRIER POLYMERS 79-06 32280C

SALAME, M. STEINGISER, S.

NEW YORK, APRIL 1976, P.18-28. CONFER. 012 PUBLCN. DETAILS-ACS, CHEM. MARKET. & ECON. DIV. HISTORICAL...CHEM. MARKET...SYMPOSIA

THE PERMEABILITY OF POLYMERS AS DETERMINED BY STRUCTURAL AND MORPHOLOGICAL PROPERTIES OF BOTH THE POLYMER MATRIX AND THE PERMEATING SPECIES IS DISCUSSED. THE CHARACTERISTICS OF HIGH BARRIER POLYMERS ARE RESISTANCE TO GAS FLOW (OF OXYGEN, CARBON DIOXIDE AND NITROGEN) LIQUID (WATER) FLOW, AND RESISTANCE TO ABSORPTION OF ORGANIC MOLECULES. THE CALCULATION AND USE OF PERMACHLOR VALUES IN PREDICTING PERMEABILITY AND THE BARRIER PROPERTIES AND APPLICATIONS OF HIGH BARRIER POLYMERS E.G. SAN ARE DESCRIBED. DETAILS OF OTHER POLYMERS ARE PRESENTED IN TABULAR FORM. 12 REFS. 6L-9351

APPARATUS FOR STUDYING THE GAS PERMEABILITY OF POLYMERS 79-02 28108L

SILONOV, YU. A. KOLESNIKOV, A. N.

PLAST.MASSY, NO.8, 1978, P.67-8

RUSSIAN. A LABORATORY APPARATUS FOR TESTING THE GAS PERMEABILITY OF POLYMERIC MATERIALS UNDER VACUUM AND HIGH PRESSURE AT VARIOUS TEMPERATURES IS DESCRIBED. 2 REFS. 293513T ARTICLES FROM THIS JOURNAL CAN BE REQUESTED FOR TRANSLATION BY SUBSCRIBERS TO THE RAPRA PRODUCED INTERNATIONAL POLYMER SCIENCE AND TECHNOLOGY

DETERMINATION OF PERMEABILITY OF POLYMERIC MEMBRANES
78-12 24850L

TEPLYAKOVA, V. V. EVSENKO, A. L. NOVITSKII, E. G.
DURGAR'YAN, S. G.

PLAST.MASSY, NO.5, 1978, P.49-51

RUSSIAN. METHODS ARE PRESENTED FOR DETERMINING THE GAS PERMEABILITY OF POLYMERIC MEMBRANES, INCLUDING INTEGRAL AND DIFFERENTIAL VARIANTS OF MEASUREMENT OF THE COEFFICIENTS OF PERMEABILITY AND DIFFUSION OF GASES IN POLYMERS, USING GAS CHROMATOGRAPHS OVER A WIDE RANGE OF TEMPERATURES, PRESSURES AND STREAMS OF PENETRANT. THE COEFFICIENTS OF PERMEABILITY AND DIFFUSION OF VARIOUS GASES IN POLYVINYLTRIMETHYLSILOXANE ARE GIVEN. 12 REFS. 6M-93513T ARTICLES FROM THIS JOURNAL CAN BE REQUESTED FOR TRANSLATION BY SUBSCRIBERS TO THE RAPRA PRODUCED INTERNATIONAL POLYMER SCIENCE AND TECHNOLOGY

NOVEL TECHNIQUE FOR MEASURING THE DIFFUSION CONSTANT OF OXYGEN IN POLYMER FILMS 79-01 26081L

MACCALLUM, J. R. RUDKIN, A. L.

EUR.POLYM.J., 14, NO.9, 1978, P.655-6

A SIMPLE TECHNIQUE IS DESCRIBED FOR THE MEASUREMENT OF THE DIFFUSION CONSTANT FOR OXYGEN IN POLYMERIC GLASSES, AND MEASURED VALUES FOR PS AND PMMA ARE REPORTED. MEASUREMENTS MAY BE MADE OVER A WIDE RANGE OF TEMPERATURES. 3 REFS. 93513T

CHARACTERISATION OF POROUS POLYMERIC MEMBRANES BY GAS PERMEABILITY 79-01 26459L

NOHMI, T. MANABE, S. KAMIDE, K. KAWAI, T.

KOBUNSHI RONBUN., 35, NO.8, AUG.1978, P.509-16

JAPANESE. AN ATTEMPT WAS MADE TO ESTABLISH A METHOD FOR ESTIMATING THIRD AND FOURTH AVERAGE PORE RADII AND PORE SIZE

FREQUENCY DISTRIBUTION FROM EXPERIMENTAL DATA ON GAS
PERMEABILITY COEFFICIENT OF POROUS MEMBRANES. 7 REFS.
6M-93513

INTRODUCTION OF PLASTICS IN BIOGAS 79-01 26881L

KALIA, A. K. SINGH, R. B.

POP.PLAST.,23,NO.4,APRIL 1978,P.52-5

THE FINDINGS ARE PRESENTED OF TESTS INTO THE SUITABILITY OF
POLYMERS SUCH AS PVC, SYNTHETIC RUBBER AND NYLON FOR THE
STORAGE AND TRANSPORTATION OF GAS DERIVED FROM DUNG AND
OTHER ORGANIC WASTES. RIGID PVC SHEET WAS FOUND TO BE
SUITABLE AS A GAS HOLDER, AND PVC/NYLON LAMINATED SHEET
WORKED SATISFACTORILY FOR THE TRANSPORTATION OF THE GAS. 1
REF. 63AG

PROBLEM OF DETERMINATION OF THE CONCENTRATION DEPENDENCE OF
THE COEFFICIENT OF ACETONE DIFFUSION IN POLYMERS
79-01 27117L

BELYAYEV, O. F. VOYEVOFSKII, V. S. BEZRUKAVNIKOVA, L. M.
MAIZELIS, B. A.

POLYM.SCI.USSR,18,NO.6,1976,P.1543-7

A STUDY WAS MADE OF LATEX FILMS BASED ON POLYISOPRENE,
POLYCHLOROPRENE AND NITRILE RUBBERS TO DETERMINE THEIR
PERMEABILITY TO ACETONE VAPOUR. DIFFUSION COEFFICIENTS WERE
OBTAINED FOR DIFFERENT SOLVENT CONCENTRATIONS USING A
PROPOSED METHOD FOR CALCULATING THE CONCENTRATION DEPENDENCE
OF THE COEFFICIENTS. 8 REFS. 93513

METHOD OF MEASURING THE DIFFUSION AND SOLUBILITY OF GASES IN
POLYMERS 79-C1 27119L

SAPOZHNIKOV, D. N. SHLYAKHOV, R. A. TOCHIN, V. A.

PLAST.MASSY, NO.6, 1978, P.68-70

RUSSIAN. 8 REFS. 93513T ARTICLES FROM THIS JOURNAL CAN BE
REQUESTED FOR TRANSLATION BY SUBSCRIBERS TO THE RAPRA
PRODUCED INTERNATIONAL POLYMER SCIENCE AND TECHNOLOGY

LIQUID POLYSULPHIDE POLYMERS 78-09 21549L

WILHELM, G.

ADHASION, 22, NO.5, MAY 1978, P.156-60

GERMAN. THE AUTHOR REVIEWS CHEMICAL COMPOSITION AND
PROPERTIES OF THE THIOL RANGE OF LIQUID POLYSULPHIDE
POLYMERS. DIFFERENCES IN CROSSLINK DENSITY RESULT IN
POLYMERS OF DIFFERENT VISCOSITY, BUT ALL CONTAIN MERCAPTO
AND GROUPS WHICH PERMIT CURING BY ATMOSPHERIC OXIDATION OR
BY OXIDATION BY MEANS OF METAL OXIDES OR ORGANIC PEROXIDES.
CURE RATE CAN BE CONTROLLED CHEMICALLY BY MEANS OF ADDITIVES
AND THE POLYMERS CAN BE USED TOGETHER WITH
PHENOL-FORMALDEHYDE, POLYESTER OR EPOXY RESINS.
TOXICOLOGICAL PROPERTIES, STRENGTH, ELECTRICAL PROPERTIES,
GAS AND WATER PERMEABILITY, ADHESIVE PROPERTIES AND THERMAL
AND SOLVENT STABILITY ARE DISCUSSED, AND A RANGE OF
APPLICATIONS REVIEWED. 32 REFS. 43C52-8962

MECHANISM OF GAS PERMEATION THROUGH POROUS POLYMERIC
MEMBRANES 78-C9 20897L

NOHMI, T. MAKINO, H. MANABE, S. KAMIDE, K. KAWAI, T.

KOBUNSHI RONBUN., 35, NO.4, APRIL 1978, P.253-61

JAPANESE. THE EFFECTS OF PORE SIZE DISTRIBUTION AND THE
CHEMICAL NATURE OF THE PERMEATING GAS ON THE PERMEABILITY
COEFFICIENT WERE INVESTIGATED. GAS FLOW WAS FOUND TO

CONSIST OF A MIXTURE OF VISCOUS AND SLIP FLOW. THE DEPENDENCE OF THE PERMEABILITY COEFFICIENT OF INORGANIC GASES ON PORE SIZE DISTRIBUTION AND THE MEAN FREE PATH OF THE GAS AGREED WITH A PREVIOUSLY PROPOSED THEORETICAL EQUATION WHEREAS THOSE OF ORGANIC GASES WERE MUCH LARGER THAN THE THEORETICAL VALUES. IT WAS SUGGESTED THAT INTERACTION BETWEEN MEMBRANE AND GAS COULD BE THE CAUSE OF OBSERVED DIFFERENCES FOR ORGANIC GASES. 14 REFS. 6M-93513

PARYLENE POLYMERS. I. SYNTHESIS, PROPERTIES AND IMPORTANCE
78-08 20094L

BALDOUF, L. HAMANN, C. LIBERA, L.

PLASTE U.KAUT.,25,NO.2,FEB.1978,P.61-4

GERMAN. THE PREPARATION OF POLY-P-XYLYLENES (PARYLENES) IS DESCRIBED AND THEIR DEPOSITIONS AS FILMS ON COOLED SURFACES BY BI-RADICAL COMBINATION METHODS, VIA THE PYROLYSIS OF P-XYLENE AND DI-P-XYLENE DERIVATIVES IN LOW-PRESSURE SYSTEMS, IS DISCUSSED. EXTREMELY UNIFORM POLYMER COATINGS OF THICKNESS 80A TO 100 MICRONS CAN BE ACHIEVED ON METAL, GLASS, WOOD OR PAPER, THEIR PURITY, MOLECULAR WEIGHT AND TRANSPARENCY BEING DETERMINED BY THE NATURE OF THE STARTING MATERIALS AND DEPOSITION CONDITIONS. ELECTRICAL AND MECHANICAL PROPERTIES AND GAS PERMEABILITY ARE EXAMINED AND USE OF THE FILMS AS DIELECTRICS IS DISCUSSED. 60 REFS. 42W

GAS PERMEATION OF POLYMER BLENDS. V. COMPATIBILITY STUDIES OF POLY (VINYL CHLORIDE) /POLY-EPSILON-CAPROLACTONE BLENDS
78-08 19713L

SHUR, Y. J. RANBY, B.

J.MACROMOL.SCI.B,14,NO.4,1977,P.565-72

THE TRANSPORT BEHAVIOUR OF OXYGEN AND NITROGEN AT 25C WAS STUDIED FOR PHYSICAL BLENDS OF PVC/PCL AND FOUR TYPES OF ETHYLENE-VINYL ACETATE AND ACRYLONITRILE-BUTADIENE COPOLYMERS. THE PVC/PCL BLENDS WERE SHOWN TO FORM A COMPATIBLE SYSTEM. IT WAS ALSO SHOWN THAT AT PCL CONTENTS OF LESS THAN 30 WT.%, A SEPARATE CRYSTALLISED PCL PHASE WAS FORMED. THE RESULTS ARE DISCUSSED IN TERMS OF COOPERATIVE

SEGMENTAL RELAXATION PROCESSES BETWEEN PVC AND PCL CHAINS.
14 REFS. 42C382-6125-93513

HIGH DENSITY POLYETHYLENE 78-06 16996L

ANON

MAT.PLAST.ELAST.,NO.1,JAN.1978,P.34-7

ITALIAN. CONSIDERATION IS GIVEN TO THE PRODUCTION OF HDPE WITH REFERENCE TO COMMONLY USED POLYMERISATION PROCESSES, AND TO THE PROPERTIES OF THIS MATERIAL, I.E. CHEMICAL PROPERTIES, GAS PERMEABILITY, MECHANICAL, ELECTRICAL AND THERMAL PROPERTIES. DETAILS ARE ALSO GIVEN OF COMPOUNDING INGREDIENTS, PROCESSING AND APPLICATIONS, AND PROPERTIES OF HDPE AND COMPARED WITH THOSE OF LDPE AND PP. A LIST OF HDPE TRADE MARKS AND MANUFACTURERS IS INCLUDED. 42C11

ESTIMATION OF POLYMER SOLUBILITY PARAMETERS BY GAS CHROMATOGRAPHY 78-07 18239L

DIPAOLA-BARANYI, G. GUILLET, J. E.

MACROMOLECULES,11,NO.1,JAN./FEB.1978,P.228-35

PARTIAL MOLAR HEATS OF MIXING, PARTIAL MOLAR FREE ENERGIES OF MIXING AND THE FLORY-HUGGINS CONSTANT WERE DETERMINED FOR A VARIETY OF HYDROCARBONS IN PS AND POLYMETHYL ACRYLATE BY GAS CHROMATOGRAPHY. SOLUBILITY COEFFICIENTS AT INFINITE DILUTION WERE CALCULATED FROM THE THERMODYNAMIC DATA AND COMPARED WITH THEORETICAL PREDICTIONS. 33 REFS. 42C21-9351

SOME ASPECTS OF PLASMA COPOLYMERISATION OF ACETYLENE WITH
NITROGEN AND/OR WATER 78-06 16346L

YASUDA, H. T HIROTSU

J.POLYM.SCI.POLYM.CHEM.,15,NO.11,NOV.1977,P.2749-71

PLASMA POLYMERISATIONS OF MIXTURES OF ACETYLENE-NITROGEN,
ACETYLENE-WATER AND ACETYLENE-NITROGEN-WATER WERE
INVESTIGATED USING AN ELECTRODELESS GLOW DISCHARGE FROM A
13.5 MHZ RADIOFREQUENCY SOURCE. PROPERTIES OF PLASMA
POLYMERS WERE EXAMINED AS FUNCTIONS OF MOLE RATIOS OF
NITROGEN AND/OR WATER TO ACETYLENE. PROPERTIES INVESTIGATED
INCLUDE INTERNAL STRESS, GAS PERMEABILITY AND SURFACE
ENERGY. 24 REFS. 42F1A-7223

POLYMERISATION OF ORGANIC COMPOUNDS IN AN ELECTRODELESS GLOW
DISCHARGE. IX 78-05 15701L

YASUDA, H. HIROTSU, T.

J.APPL.POLYM.SCI.,21,NO.11,NOV.1977,P.3167-77

PROPERTIES (FREE-RADICAL CONCENTRATION, GAS PERMEABILITIES,
INTERNAL STRESS, AND CONTACT ANGLE OF WATER) OF PLASMA
POLYMERS OF ACETYLENE AND OF ACRYLONITRILE WERE INVESTIGATED
AS A FUNCTION OF FLOW RATE OF MONOMER. IT WAS FOUND THAT
THE FLOW RATE HAS A STRONG INFLUENCE ON FREE-RADICAL
CONCENTRATION, GAS PERMEABILITIES AND INTERNAL STRESS BUT
LITTLE INFLUENCE ON THE CONTACT ANGLE OF WATER. THE
DISCHARGE POWER HAS LITTLE EFFECT ON PROPERTIES WHEN FULL
GLOW IS MAINTAINED. GAS PERMEABILITIES DECREASE WITH
INCREASING CONCENTRATION OF FREE RADICALS. 11 REFS.
(PT.VIII,IBID. P.3139-46) 42F1-7223

NOBLE GAS PERMEABILITY OF POLYMER FILMS AND COATINGS
78-03 12274L

HAMMON, H. G. ERNST, K. NEWTON, J. C.

J.APPL.POLYM.SCI.,21,NO.7,JULY 1977,P.1989-97

PERMEABILITIES OF NOBLE GASES, PARTICULARLY ARGON, KRYPTON AND XENON, WERE MEASURED THROUGH A NUMBER OF POLYMER FILMS AND COATINGS. EXTRAPOLATION OF THE LOG OF THE PERMEATION COEFFICIENT VERSUS THE SQUARE OF THE GAS MOLECULAR DIAMETER WAS USED TO ESTIMATE RANDOM PERMEABILITY. AN EQUATION IS PRESENTED FOR PREDICTING PERMEABILITY TO THESE NOBLE GASES AS A FUNCTION OF THE BASE POLYMER STRUCTURE OF THE COATING.
14 REFS. 625-93513

DETERMINATION OF DIFFUSION COEFFICIENTS IN POLYETHYLENE BY
GAS CHROMATOGRAPHY 78-03 12526L

MILLEN, W. HAWKES, S. J.

J.POLYM.SCI.POLYM.LETT.,15,NO.8,AUG.1977,P.463-5

AN EXPRESSION FOR CALCULATING THE STATIONARY PHASE MASS TRANSFER TERM FOR THE DIFFUSIVITY OF ORGANIC MOLECULES IN LIQUID POLYMERS IS DISCUSSED. REVISED VALUES OF DIFFUSION COEFFICIENTS FOR SEVERAL SOLUTES IN LDPE USING THIS EQUATION ARE TABULATED. 8 REFS. 42C11-9351

DIFFUSION CELL FOR STUDY OF GAS TRANSFER THROUGH WALLS OF
POLYMER TUBES 78-02 11562L

KAPANIN, V. V. PRILIPOV, V. V.

POLYM.SCI.USSR,18,NO.3,1976,P.820-3

THE DESIGN OF A DIFFUSION CELL FOR INVESTIGATING THE TRANSFER OF LOW MOLEC.WT. SUBSTANCES THROUGH POLYMER TUBE WALLS, USING A GAS CHROMATOGRAPH, IS DESCRIBED. USING LDPE TUBES, IT WAS SHOWN THAT PRESSURE HAD NO EFFECT ON THE PERMEABILITY FACTOR AND THAT THE TEMP. DEPENDENCE OF THE

PERMEABILITY FACTOR WAS SIMILAR TO THAT OF FILMS. 8 REFS.
293513T

BARRIER POLYMERS 78-01 11207L

SALAME, M. STEINGISER, S.

POLYM.PLAST.TECHNCL.ENGNG.,8,NO.2,1977,P.155-75

FACTORS AFFECTING POLYMER BARRIER PROPERTIES AND THE EFFECTS OF POLYMER PARAMETERS, TEMP. AND THICKNESS AND PERMEATING SPECIES ON POLYMER BARRIER PROPERTIES ARE DISCUSSED. THE PREDICTION OF PERMEABILITY, DEFINITION AND CLASSIFICATION OF HIGH BARRIER POLYMERS, TYPES AND PROPERTIES OF HIGH BARRIER POLYMERS, DILUTE SOLUTION ABSORPTION, BARRIER PROPERTIES OF NITRILE POLYMERS AND ACRYLONITRILE-STYRENE COPOLYMERS ARE ALSO CONSIDERED. 12 REFS. (ACS CENTENNIAL MEETING, NEW YORK CITY, APRIL 1976) 9351

ENGINEERING PROPERTIES AND PERFORMANCE OF HIGH
ACRYLONITRILE-STYRENE POLYMER SYSTEMS 77-12 05484C

HALL, W. J. CHI, H. K.

CLEVELAND, OHIO, OCT. 1976, P. 1-5. CONFER. 012 PUBLCN.
DETAILS- SPE. HIGH PERFORMANCE PLASTICS. NATIONAL TECHNICAL
CONFERENCE

HIGH ACRYLONITRILE-STYRENE COPOLYMER SYSTEMS, CONTAINING 60-70% ACRYLONITRILE, ARE DISCUSSED WITH PARTICULAR REFERENCE TO SYNTHESIS, THERMAL STABILITY, MELT VISCOSITY, GENERAL PROPERTIES OF AN INJECTION MOULDED SPECIMEN, ORIENTED FILM AND SHEET PROPERTIES, MELT FLOW, CHEMICAL RESISTANCE UV RESISTANCE, OUTDOOR WEATHERING RESISTANCE AND PERMEABILITY TRANSFER OF GASES AND WATER VAPOUR. 8 REFS.
42C391C21-9

CHROMATOGRAPHIC DETERMINATION OF THE GAS PERMEABILITY OF
FILMS 77-12 05404L

ARKHIPTSEV, N. E. SHISHIMAROV, A. A. MOCHALOVA, L. A.

PLAST.MASSY, NO.4, 1977, P.73-4

RUSSIAN. THE METHOD PERMITS DETERMINATION OF THE
PERMEABILITY OF POLYMERIC FILMS TO CARBON DIOXIDE, OXYGEN
AND NITROGEN. 3 REFS. 93513T SELECTED TRANSLATIONS FROM
THIS JOURNAL ARE AVAILABLE TO SUBSCRIBERS TO THE RAPRA
PRODUCED INTERNATIONAL POLYMER SCIENCE AND TECHNOLOGY

STUDY OF POLYMERS BY INVERSE GAS CHROMATOGRAPHY
77-01 00297L

BRAUN, J. M. GUILLET, J. E.

ADV.POLYM.SCI., NO.21, 1976, P.107-45

GAS CHROMATOGRAPHY; REVIEW. 116 REFS. 91T

PERMEABILITY -STRUCTURE RELATIONSHIPS OF HIGH POLYMERS
77-01 00337C

SALAME, M.

COATINGS PLAST.PREPRINTS, 36, NO.1, APR.1976, P.488-97. CONFER.
PUBLCN. DETAILS- 1ST CHEMICAL CONGRESS ON N.AMERICAN
CONTINENT, MEXICO CITY, DEC.1975

GAS PERMEABILITY; CHEMICAL STRUCTURE; LIQUID. 10 REFS. 9351

EFFECTS OF GASEOUS ENVIRONMENTS ON POLYMERS

77-03 01455L

BROWN, N.

MAT.SCI.ENGNG.,25,NO.1/2,SEPT./OCT.1976,P.87-91

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MACROMOLECULES,6,NO.2,MARCH/APRIL 1973,P.223-7

IN THIS PAPER THE FACTORS WHICH GOVERN PEAK SHAPE IN GAS CHROMATOGRAPHY ARE OUTLINED AND THEIR RELEVANCE TO DIFFUSION MEASUREMENTS ON POLYMERIC SUBSTRATES IS INVESTIGATED. BY A SUITABLE CHOICE OF CONDITIONS THE VAN DEEMTER EQUATION ENABLES DIFFUSION COEFFICIENTS TO BE CALCULATED FROM THE VARIATION IN CHROMATOGRAPHIC PEAK WIDTH WITH CARRIER GAS FLOW RATE. THIS METHOD IS APPLICABLE TO SOME HYDROCARBON PENETRANTS IN A PE STATIONARY PHASE. 20 REFS. 93513

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THE DIFFUSION TIME LAG WAS STUDIED IN POLYMERIC MEMBRANES CONTAINING A DISPERSED SECOND PHASE WHICH IMMOBILISED PART OF THE DIFFUSING SUBSTANCE. EQUATIONS WERE DEVELOPED FOR PREDICTING THIS QUANTITY BY OBTAINING ASYMPTOTIC SOLUTIONS OF THE APPROPRIATE TRANSPORT EQUATIONS. A CLOSED-VOLUME, PRESSURE-GROWTH METHOD WAS USED TO COLLECT TIME LAG AND PERMEABILITY DATA FOR TRANSPORT OF CARBON DIOXIDE, METHANE, NITROGEN AND HELIUM THROUGH SILICONE RUBBER MEMBRANES CONTAINING VARIOUS AMOUNTS OF 5A MOLECULAR SIEVE CRYSTALS. SORPTION CHARACTERISTICS OF THE MEMBRANES FOR THE GASES WERE MEASURED GRAVIMETRICALLY. RESULTS SHOWED THAT THE TIME LAG WAS INCREASED BY UP TO TWO ORDERS OF MAGNITUDE BY DESPERSING RELATIVELY SMALL AMOUNTS OF MOLECULAR SIEVE IN THE POLYMER. (THESIS, UNIVERSITY OF TEXAS AT AUSTIN, 1972, PP.187, ORDER NO.73-466) 45C-6M-93513

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WEST-GAEKE METHOD FOR SUBSEQUENT DETERMINATION OF THE TRAPPED SULPHUR DIOXIDE. ESSENTIALLY, A GLASS TUBE, STOPPERED AT ONE END, IS FILLED WITH A SOLUTION OF 1.0M SODIUM TETRACHLOROMERCURATE AND THE EXPOSED END COVERED WITH A SILICONE RUBBER MEMBRANE. WHEN THE TUBE IS EXPOSED TO AIR CONTAINING SULPHUR DIOXIDE, THE SULPHUR DIOXIDE PERMEATES THROUGH THE MEMBRANE AND IS ABSORBED BY THE SOLUTION. (THESIS, LOUISIANA STATE UNIVERSITY AND AGRICULTURAL AND MECHANICAL COLLEGE, 1972, PP.89, ORDER NO.73-2980)
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POLYM.J.(JAP.),4,NO.6,1973,P.601-6

CHAIN SCISSION OF NYLON 66 FILMS DUE TO EXPOSURE TO NITROGEN DIOXIDE AT A PRESSURE OF 0.5 MM.HG WAS STUDIED AS A FUNCTION OF TEMP., FILM THICKNESS AND POLYMER MORPHOLOGY. THE RATE OF RANDOM CHAIN SCISSION WAS VERY SENSITIVE TO CHANGES IN MORPHOLOGY CAUSED BY VARIATIONS IN SOLVENT COMPOSITION FOR FILM CASTING AND IN METHOD OF PREPARATION. DECREASE OF CHAIN SCISSION WITH FILM THICKNESS INDICATED THAT DIFFUSION OF NITROGEN DIOXIDE INTO NYLON 66 WAS RATE-DETERMINING. AMIDE LINKS IN THE CHAIN FOLDS OF THE POLYMER MOLECULES LOCATED IN THE INTERFACIAL REGION BETWEEN AMORPHOUS AND CRYSTALLINE POLYMER PORTIONS WERE THOUGHT TO BE PARTICULARLY SUSCEPTIBLE TO CHAIN SCISSION, DUE TO THEIR STRAIN ENERGY.
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JELLINEK, H. H. G.

TEXT.RES.J.,43,NO.10,OCT.1973,P.557-60

THE EFFECT OF NITROGEN DIOXIDE AND SULPHUR DIOXIDE ON LINEAR POLYMERS IN PRESENCE AND ABSENCE OF AIR, OZONE AND NEAR-UV IRRADIATION WAS STUDIED. BESIDES RANDOM CHAIN SCISSION AND CROSSLINKING, INCORPORATION OF RESPECTIVE GROUPS ALONG THE SIDES OF THE CHAINS WAS FOUND TO TAKE PLACE. LOW MOLEC. WT.

COMPOUNDS WERE ALSO EVOLVED. DEGRADATION WAS SENSITIVE TO THE MORPHOLOGY OF THE POLYMER AND ALSO TO THE PERCENTAGE OF CRYSTALLINITY, SIZE AND SIZE DISTRIBUTION OF CRYSTALLITES IN THE POLYMER FILMS. RANDOM CHAIN SCISSION IS DISCUSSED IN DETAIL. 13 REFS. (ACS, DIV. OF CELLULOSE, WOOD AND FIBER CHEMISTRY, SYMPOSIUM ON TEXTILE FINISHING CHEMISTRY, 164TH NATIONAL MEETING, NEW YORK, AUG./SEPT. 1972) 93513

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8 81-06 68247L

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6 81-11 76608C

UNDER
11 80-12 57154L

URETHANE
5 82-01 00264L

UV
11 80-12 57154L

UV DEGRADATION
11 80-12 57154L
31 77-12 05484C

UV IRRADIATION
38 73-12 17421L

UV STABILITY
9 81-05 65408L

VACUUM
7 81-11 76102L
23 79-02 28108L

VACUUM FORMED
7 81-10 75169L

VAN DER WAALS ATTRACTION
33 77-03 01455L

VAPOUR
12 80-11 55870L
19 79-11 38007L
20 79-10 37611L
21 79-10 36895L
25 79-01 27117L

VAPOUR
35 7409-25723L

VAPOUR PERMEABILITY
1 82-03 03929L
2 82-03 03931L

VAPOUR-PHASE
4 82-02 02023L

VAPOUR-PHASE POLYMERISATION
12 80-11 55870L

VAPOUR-PRESSURE OSMOMETRY
20 79-10 37611L

VAPOURS
1 82-03 03929L
5 82-01 00520L
15 80-08 51211L
20 79-10 36773L
34 7408-25139L
34 7408-25139L
35 7510-37548L

VARIOUS
9 81-05 65408L
11 80-12 57154L
15 80-07 50126L
23 79-02 28108L

VEHICLE SUSPENSIONS
9 81-02 59593L

VINYL
27 78-08 19713L

VINYL ACETATE COPOLYMER
27 78-08 19713L

VINYLAALKYLDIMETHYL
16 80-06 49196L

VISCOELASTIC PROPERTIES
8 81-06 67207L

VISCOSITY
26 78-09 21549L

VISTRON CORP
14 80-09 52281L

VOLUME
9 81-05 66434L

VULCANISATION
6 81-11 76608C
13 80-10 53121A

WALLS
30 78-02 11562L

WATER
23 79-06 32280C
29 78-05 15701L
29 78-06 16346L
35 7409-25723L
36 73-10 16349L

WATER PERMEABILITY
23 79-06 32280C
26 78-09 21549L

WATER VAPOUR
5 82-01 00520L
31 77-12 05484C

WATER VAPOUR PERMEABILITY
15 80-08 51211L

WATER-SOLUBLE
21 79-10 36776L

WEATHERING
19 79-11 38147L

WEATHERING RESISTANCE
31 77-12 05484C

WHICH
21 79-10 36776L

WILLIAMS, M. J. L.
1 82-03 03929L

WIRTSCHAFTSVERBAND DER DEUTSCH
13 80-10 53121A

XENON
30 78-03 12274L

ZIEGLER, B.
8 81-06 68247L

42C11
28 78-06 16996L

42C11-61122-6125-93513
33 77-07 02524L

42C11-8953-93513
7 81-11 76102L

42C11-935T
4 82-02 02270L

42C11C3311-6125-93513
27 78-08 19713L

42C12-6M-93513
6 81-12 79071L

42C131D12
9 81-02 59593L

42C21C391D11-6125-93513
33 77-07 02525L

42C35-55CAH-93513
3 82-03 03935L

42C351A-9351
7 81-10 75169L

42C35111-9351
28 78-07 18239L

42C382-622-932
8 81-06 68247L

42C391-7223
29 78-05 15701L

42C391-9
29 78-05 15701L

42D1-625-93513
25 79-01 27117L

42F1-7223
29 78-05 15701L

42F1-9
29 78-05 15701L

42F1A-7223
29 78-06 16346L

43C1-6125-93513
27 78-08 19713L

43C112-625-936
17 80-06 47953C

43C12-93513
2 82-03 03931L
8 81-06 67207L

43C313-93513
38 73-12 17253L

43C318-6A31-723
4 82-02 02023L

43C4-93513
8 81-06 67207L

43C52-9
26 78-09 21549L

43C52-91
26 78-09 21549L

43C6-5155-9
5 82-01 00264L

45C
6 81-11 76608C

45C-6M-93513
37 73-12 17060L
37 73-12 17061L

6A3-93513
30 78-03 12274L

6E1-93
19 79-11 38147L

6H2-93513T
30 78-02 11562L

6M-93513
5 82-01 00520L
6 81-11 77873L
10 81-01 58208L
10 81-01 58209L

6P21-93513
36 73-10 16349L

6122-9T
20 79-10 37611L

625-8(11)3464-93513T
18 79-12 39758L